
Off-Hook Queuing

Off-Hook Queuing (OHQ) is a software feature that can be equipped at a Meridian 1 Node and/or a Meridian 1 Main. The feature enables a call originator to remain off-hook for a short time (this length of time is customer programmable) until a network facility for call completion becomes available at the Node or the Main.

Off-Hook Queuing

Network calls may be placed in an OHQ mode if all trunk routes (entries) in the initial route set of a route list (see Note) are busy and the following criteria are met:

- At least one of the trunk routes in the initial route set of a route list is defined as being eligible for OHQ.
- The Network Class of Service (NCOS) of the call originator (at a Node or a Main) is defined to permit OHQ.
- The incoming trunk group at the Node or the Main is defined in software to permit OHQ for incoming calls.
- The Traveling Class Mark (TCM) received at the Node from an Electronic Tie Network (ETN) switch is compatible with a Facility Restriction Level (FRL) that is defined to permit OHQ.
- The Traveling Class of Service (TCOS) received at the Node from another Node is compatible with an FRL that is defined to permit OHQ.
- The probability that the call will timeout in the OHQ before a trunk becomes available is below a specific threshold.
- The OHQ feature is enabled for the customer.

Note: A Meridian 1-defined initial set “marker” determines which route list entries are in the initial route set. Typically, the initial route set contains the cheaper routes to a particular destination. The remaining routes in the route list (if any) comprise the extended route set and are usually the more expensive routes to the destination. Only routes in the initial route set should be defined to allow OHQ. OHQ will not be offered by routes in the extended route set even if they are defined to allow OHQ.

Calls that do not meet the preceding requirements for OHQ eligibility may be offered Call-Back Queuing (CBQ) at this point.

Off-Hook Queuing availability

The OHQ software performs an “availability” test to prevent calls from entering the OHQ when there is a high probability that the call will timeout before a trunk becomes available. The following procedure is used for this test:

- For each trunk route, a counter is maintained that reflects the current number of calls with the maximum queue priority of 3 queued against it. This includes all calls in OHQ and the Call-Back Queuing (CBQ) and Ring Again (RGA) calls that are currently at priority 3.
- Each trunk route has a threshold value that indicates the maximum number of priority 3 calls that can be queued against it before OHQ timeout becomes a high probability. Before a call is placed in the OHQ, the current queue count is compared with the threshold value for each eligible trunk route in the initial set of routes. If at least one of the trunk routes has a count less than or equal to the threshold value, the call is allowed to perform OHQ against all OHQ eligible routes.

The Off-Hook Queuing offer

If all eligibility and availability checks are successful, the call originator is given a distinctive OHQ offer tone (a 1-second burst of 440 Hz tone) when the call enters the OHQ. The call originator either accepts the OHQ offer by remaining off-hook, or declines the offer by going on-hook.

OHQ calls are placed in a priority-ordered queue with all other calls waiting for trunks. OHQ calls are assigned maximum priority (3) because other network facilities may be held while the call is queued. A timer with an initial value equal to the software-defined OHQ time limit is started to limit the duration of the OHQ. (The OHQ time limit is service changeable within the range of 2 to 60 seconds.)

The queue is examined whenever a trunk becomes idle in a trunk route on which one or more calls are queued. If a call is found that can be terminated on an idle trunk, the available trunk is seized and the call terminated.

If the OHQ timer expires before the call can be terminated, the call is removed from the OHQ. At this time, the remaining eligible routes in the route list (the extended set) are examined and the call is either terminated or given standard blocking treatment if no facilities are available. (CBQ will not be offered at this point, since OHQ was already offered.) Expensive Route Warning Tone (ERWT) is not given to calls that have been queued, even if terminated on expensive facilities.

OHQ can be offered to call originators located at a Node, Main, Conventional Main, or Electronic Tie Network (ETN) switch. Also, as a call progresses through the network, OHQ can be offered to the call originator from any of the Nodes or Mains that are used to process the call (that is, OHQ can be offered more than once for a given call).

Off-Hook Queuing traffic measurements

Traffic measurement data that is related to usage of the OHQ feature is accumulated at a Node or a Main that is equipped with the Network Traffic (NTRF) feature. Data for OHQ usage is available in *Traffic measurement formats and output* (553-2001-450).

Routing measurements (TFN001)

Routing measurements (TFN001) are available at a Node or a Main. They reflect on a route list basis the number of calls placed in the OHQ, the average time that a call waited in the OHQ, and the number of calls abandoned while in the OHQ.

Network Class of Service measurements (TFN002)

Network Class of Service (NCOS) measurements (TFN002) are available at a Node or a Main. They reflect on an NCOS basis the number of calls placed in the OHQ and the average time that a call waited in the OHQ.

Incoming trunk group measurements (TFN003)

Incoming trunk group measurements (TFN003) are available at a Node. (They are also available at a Main if the OHQ feature is equipped and some incoming trunk groups are defined as OHQ eligible.) These measurements reflect on an incoming-trunk or two-way trunk group basis the number of calls placed in the OHQ and the average time that a call waited in the OHQ.

Feature interactions

The OHQ feature has the following interactions with existing Meridian 1 features.

Call modification

Station users are not allowed to activate call modification features (Hold, Call Transfer, or Conference) while waiting in the OHQ. A switchhook flash that is used to activate features from 500/2500 sets is ignored. Similarly, the operation of SL-1 or digital set feature keys is ignored.

Camp-On, Call Waiting

If the attendant extends a call to a station that is in the OHQ, the Call Waiting tone is not offered to the station. If the attendant releases, the call is camped-on the OHQ station, but no warning tone is given. When the Camp-On call is recalled to the attendant console, the attendant can repeat the Camp-On procedure. Once the OHQ call is in an established state, the Camp-On tone is provided.

Attendant functions

- The attendant cannot barge in during trunk seizure for OHQ calls.
- If the attendant extends a network call for a station user and the call is offered OHQ, the attendant must inform the caller of the OHQ offer before releasing from the call.
- The attendant is not allowed to operate the release key or another loop key if the source call is in conference and the destination call is in the OHQ. Operation of the release destination key is permitted, however, and causes the OHQ call to be abandoned.